

**PHASE-CHANGEABLE DEVICES HAVING AN INSULATING BUFFER
LAYER AND METHODS OF FABRICATING THE SAME**

Abstract of the Disclosure

Phase-changeable devices and method of fabricating phase-changeable
5 devices are provided. The phase-changeable devices have a first insulating layer
disposed on a first electrode. A heater plug extends through the first insulating layer
and contacts the first electrode. A buffer insulating layer region is disposed on the
first insulating layer opposite the first electrode and a phase-changeable material
region is disposed on the buffer insulating layer region. The phase-changeable
10 material region may extend into the buffer insulating layer region. The phase-
changeable material region contacts a surface of the heater plug. A second electrode
disposed on the phase-changeable material region. Spacers may be provided on
sidewalls of the buffer insulating layer region between the phase-changeable material
region and the buffer insulating layer region. The buffer insulating layer region may
15 have a thermal expansion coefficient between the thermal expansion coefficients of
the first insulating layer and the phase-changeable material region.